

Official 7/9/03 REMARKS

This is in response to the Office action of April 10, 2003, and is timely filed. In light of the above amendments and the following remarks, Applicants respectfully request reconsideration and withdrawal of the rejections.

Status of the Application

Claims 1-21 were pending, and claims 1-21 were rejected. Claims 1-21 remain pending.

Formal Matters

The Office action discussed a reference (WO 97/45778) that was not listed in the PTO-892 form that accompanied the Office action. In order to ensure that this reference is listed on the face of the patent that issues from this application, Applicants submit herewith a PTO-1449 form listing the reference WO 97/45778. Applicants respectfully request the Examiner to initial the PTO-1449 form and to return a copy of the initialed form to Applicants' attorney.

The Rejection Under 35 U.S.C. §103

The Examiner rejected claims 1-21 in view of two published PCT applications: WO 97/38362 (Santoline), and WO 97/45778 (Bowling). In particular, the Examiner rejected claims 1-9 and 11-18 under 35 U.S.C. §103 as being unpatentable over Santoline in view of Bowling. Additionally, the Examiner rejected claims 10 and 19-21 under 35 U.S.C. §103 as being unpatentable over Santoline in view of Bowling, and further in view of U.S. Patent No. 6,377,859 to Brown et al. (Brown). Applicants respectfully traverse the rejections.

A. Claims 1-18

Each of independent claims 1 and 12 (and, therefore, each of the associated dependent claims 2-11 and 13-18) recites a system or method that stores, on a single computer, both a configuration application which is capable of being executed within a distributed process control system workstation to create control modules for execution by a distributed controller, and a controller application which is adapted to

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be executed on a controller within a distributed process control system to implement the control modules during operation of the distributed process control system. More particularly, the configuration application creates one or more control modules capable of being used by a distributed process controller and the controller application then causes execution of the control modules within the same computer to both design control modules and simulate the operation of the control modules within a distributed process control system on a single computer. In this manner, the system and method of claims 1 and 12 enable a distributed process control routine to be both designed (created) and tested on a single computer. Such a combined design and operational testing system is particularly useful in distributed process control systems (in which control routines are generally designed to be located and executed in different process control devices, such as in different controllers and field devices at separate locations in the process plant) because it is sometimes difficult to correctly configure or create the appropriate process control routines and their communication interconnections in the first place.

With regard to claim 1, the Examiner admits that Santoline does not disclose "a configuration application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration application is capable of being executed on the user workstation to create control modules for execution by the distributed controller" and "wherein the configuration application, when executed on the computer, is further adapted to create a first control module capable of being used by the distributed controller within the distributed process control system and wherein the controller application is adapted to cause execution of the first control module within the computer to simulate operation of the distributed process control system," as recited in claim 1. The Examiner asserts, however, that Bowling discloses these elements, and that it would be obvious to modify the apparatus of Santoline in view of Bowling.

Similarly, with regard to claim 12, the Examiner admits that Santoline does not disclose elements related to a configuration application that creates a control module, and then relies on Bowling to supply the elements missing from Santoline.

While Bowling describes re-hosting a controller application from a controller within a process plant to a simulation computer to simulate the operation of the controller application, Bowling does not disclose or suggest placing a configuration

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application (used to create control modules run by the controller application in the first place) in the same simulation computer as the controller application. As a result, unlike the system and method recited by claims 1 and 12, Bowling does not disclose or suggest a configuration design and simulation system that can be run on a single computer to both create one or more control modules (applications to be run by a controller within the process plant) and to then simulate the operation of those control modules, once created.

As indicated above, the system and method of claims 1 and 12 not only simulate controller operation once the controller software has been created, but also simulate or allow a user to create the controller software in the first place so that the user can then immediately test that controller software on the simulation computer to observe its operation without having to download the controller software to a controller within the process plant. Bowling, on the other hand, does not disclose or suggest that it is even possible to provide a combined design and simulation environment in which controller software can both be created and tested on a single computer. To the contrary, Bowling merely describes controller software that, once created and downloaded to a controller within a process plant, can be placed on an additional computer with a process model to simulate operation of the controller software. Bowling does not disclose or suggest that it is possible or desirable to additionally enable configuration of the controller software to occur in the same simulation computer to thereby enable the user or an operator to first design the configuration of controller software and then to immediately simulate the operation of that controller software. To the contrary, Bowling simply assumes that the controller software is created offline and has been previously downloaded to the controller.

The addition of a configuration application to a process control simulation environment is particularly important within distributed process control networks in which the controller software is generally not run simply in a single controller but is spread throughout different controllers and/or different field devices, all of which must communicate with one another in the correct manner to enable proper control system operation. Thus, configuration of the controller software includes not only how the software runs but how different parts of this software (e.g., different function blocks, etc.) communicate with one another either in the same device or in different devices. The configuration of such communication connections, while being

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particularly important, can also be a major source of error in creating the distributed process control routine in the first place because the wrong communication connections can cause incorrect operation of the controller software. Such a problem is not present in the system of Bowling in which the controller software is all designed for and stored in a single controller and then simply re-hosted or copied to the simulation computer. Providing the configuration component of a distributed process control system in the same computer as the controller software provides a great advantage in distributed process control systems (as is recited by claims 1 and 12) as it enables a user to design or create and to then test the controller software, and its communication connections, prior to placing this controller software down within the different process control devices within the process plant.

The system and method recited by claims 1 and 12 therefore allow a user to simulate design of a process control system having control modules distributed throughout different devices within a distributed process control system and to then test that configuration once designed, all on a single computer before the process control plant hardware is even available. Bowling does not provide any suggestion or reason for adding a configuration application to a simulation system. The only suggestion or reasoning for providing the configuration software on the same computer as the simulation software to simulate both the design and the operation of the process control system comes from the applicants' disclosure, and not from any of the prior art, which does not recognize the need for such a combination.

Because the applied references do not disclose, teach, or suggest all the elements of each of claims 1-18, Applicants respectfully submit that these claims are allowable.

B. Claims 19-21

Independent claim 19 (and, therefore, each of claims 20-21 which depend from claim 19) recites a viewing application that is "adapted to communicate with the controller application and to use the display to display information sent from the further controller." The Examiner admits that Santoline does not disclose this element, but asserts that Bowling discloses this element.

Bowling describes a first man-machine interface (MMI) through which a device controller can be monitored and/or controlled. Bowling further describes a

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second MMI which can communicate with a simulation unit. Bowling does not disclose or suggest, however, a single MMI that can communicate with a controller application and display information sent from a further controller. To the contrary, Bowling describes two separate MMIs: a first MMI for the device controller and a second MMI for the simulation unit. Thus, the applied references do not disclose, teach, or suggest the above-discussed element.

Because the applied references do not disclose, teach, or suggest all the elements of each of claims 19-21, Applicants respectfully submit that these claims are allowable.

Conclusion

In view of the foregoing, it is respectfully submitted that the above application is in condition for allowance and a notification of such is respectfully requested.

If the examiner has any questions or comments regarding this action or if the examiner believes that a telephone call to the below-identified attorney would be beneficial in any manner, the examiner is respectfully requested to contact the attorney at the undersigned number.

Respectfully submitted,

Date: July 9, 2003

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